

CLAIMS

What is claimed is:

1. A method of filling holes in a substrate having a plurality of holes to be filled comprising:
providing an etched hole-fill stand-off;
aligning the stand-off to a tooling plate;
aligning the substrate to the stand off and placing the substrate in contact with the stand-off; and
filling the plurality of holes of the substrate.
2. The method of claim 1 wherein providing an etched hole-fill stand-off comprises imaging a copper clad laminate with an image similar to that used to image a surface of the substrate, and subjecting the imaged laminate to develop-etch-strip processing to form a pattern in a copper surface of the laminate, the pattern having a plurality of holes, each of the plurality of holes corresponding to a hole to be filled of the substrate, the laminate holes being at least slightly larger in diameter than their corresponding substrate holes.
3. The method of claim 2 further comprising filling the through holes of the substrate with a fill material such that the fill material extends at least partially into the holes of the stand-off.
4. The method of claim 3 further comprising removing the substrate from the stand-off wherein substantially all of the fill material extending into the stand-off remains after removal of the stand-off.
5. A method of filling holes in a substrate having a plurality of holes of be filled comprising:
imaging a copper clad laminate with an image similar to that used to image a surface of the substrate;

subjecting the imaged laminate to develop-etch-strip processing to form an etched hole-fill stand off that has a pattern in a copper surface of the laminate, the pattern having a plurality of holes, each of the plurality of holes corresponding to a hole to be filled of the substrate, the laminate holes being at least slightly larger in diameter than their corresponding substrate holes; aligning the stand-off to a tooling plate; aligning the substrate to the stand off and placing the substrate in contact with the stand-off; and filling the plurality of holes of the substrate.